

PROPOSED NEW CLAIMS

11. A modulator circuit, comprising: a negative impedance amplifier operable for reflecting and amplifying a signal applied to the amplifier; and switching means for switching the impedance amplifier between two reflecting states having impedances in the two reflecting states selected such that a phase of a reflected and amplified signal switches by substantially 180°.

12. The modulator circuit according to claim 11, in which the impedances in the two reflecting states are selected such that a reflection gain of the amplifier in the two reflecting states is substantially the same and such that the reflected and amplified signal is a binary phase shift keyed signal.

13. The modulator circuit according to claim 11, in which the impedances in the two reflecting states are selected such that a reflection gain of the amplifier in the two reflecting states is different, and wherein the impedances are selected such the reflected and amplified signal is a substantially single sideband signal.

14. The modulator circuit according to claim 11, in which the negative impedance amplifier comprises a transistor, and a biasing means for biasing the transistor such as to act as the negative impedance amplifier.

15. The modulator circuit according to claim 14, in which the switching means switches the biasing of the transistor to switch the transistor between the two reflecting states.

16. The modulator circuit according to claim 11, and further comprising an antenna for receiving and converting radiation to the signal applied to the amplifier, and for radiating the reflected and amplified signal.

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17. The modulator circuit according to claim 14, in which the transistor comprises a bipolar transistor.

18. The modulator circuit according to claim 14, in which the transistor comprises a field effect transistor.

19. A de-modulator circuit for de-modulating a binary phase shift keyed signal, comprising: a modulator circuit including a negative impedance amplifier operable for reflecting and amplifying a signal applied to the amplifier; and switching means for switching the impedance amplifier between two reflecting states having impedances in the two reflecting states selected such that a phase of a reflected and amplified signal switches by substantially 180° .

20. A transponder tag, comprising: a modulator circuit including a negative impedance amplifier operable for reflecting and amplifying a signal applied to the amplifier; and switching means for switching the impedance amplifier between two reflecting states having impedances in the two reflecting states selected such that a phase of a reflected and amplified signal switches by substantially 180° .